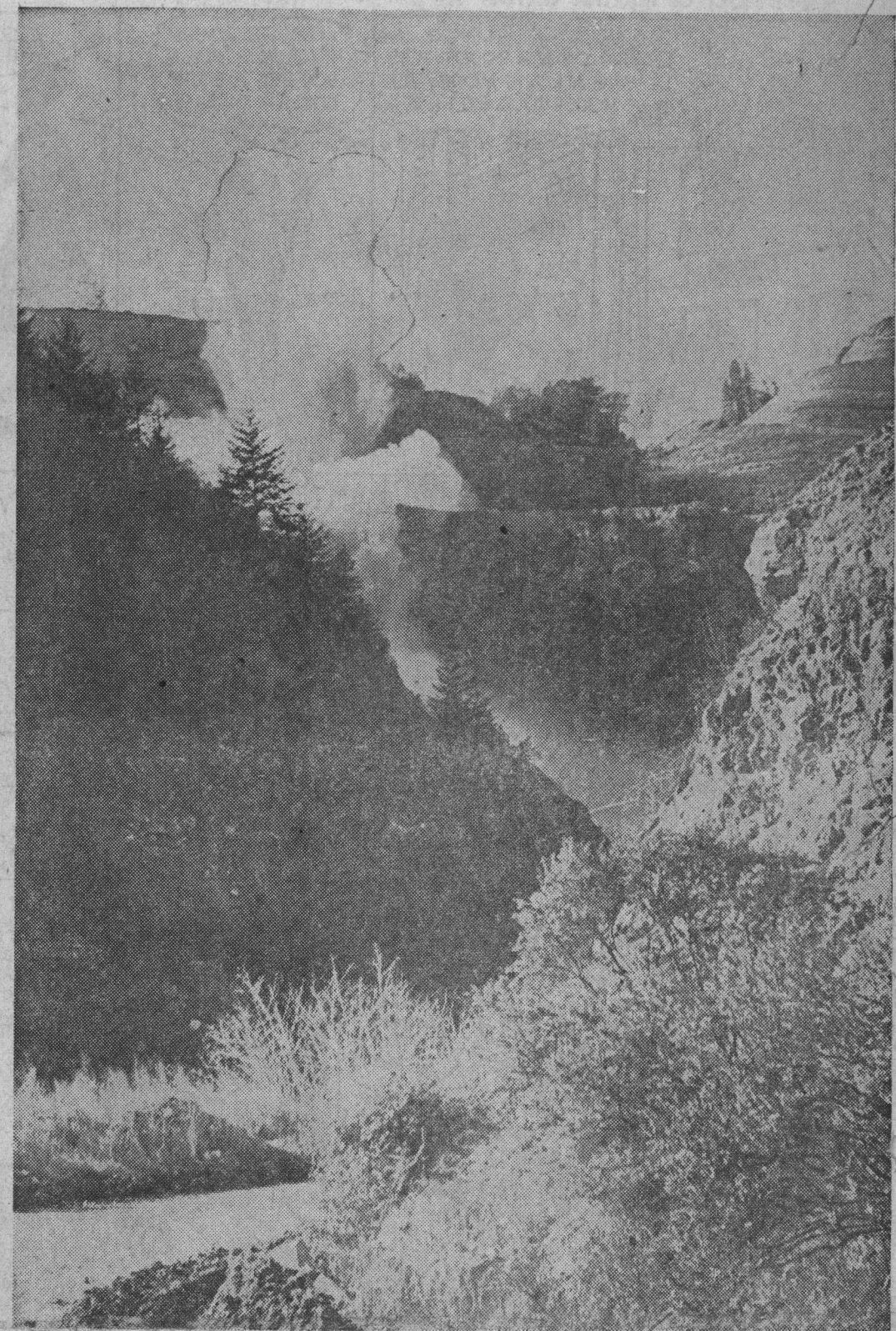


Above is the vast man-made canyon, three miles north of Davenport in the mountains. Man has dug limestone from here for about 50 years. It's more than 800 feet deep, a mile wide and a mile and a quarter long. Photo was taken from ledge half way up side. Note how small the huge truck appears at the bottom.



Above, 6500 pounds of high explosives knock a 15,000-ton chunk out of the side of the PCA's limestone quarry in a weekly noontime blast. Eighty holes, 30 feet deep, and filled with explosives caused this commotion. Although this photo was taken about a mile from the scene, it was considered risky to be this close. Below, is a drilling rig which goes to work next to the blast to prepare for the next blast usually about a week away. They are always set at 12:25 p.m. so residents in the surrounding area can expect them.

# PCA's Grand Canyon

Story and Photos by Wally Trabing

Santa Cruz county has a grand canyon of its own that's not open to tourists.

It's a man-made hole behind Davenport that runs a mile and a quarter long, a mile wide and sinks in a vast "V" more than 800 feet from its rims.

Since around 1906, man has

had been capped with about 10 feet of drill dust.

Fuses to all holes were connected and covered with dirt to help deaden the noise. Then an electrical wire was strung out about 500 yards to a safe shelter.

Blasting occurs once or twice

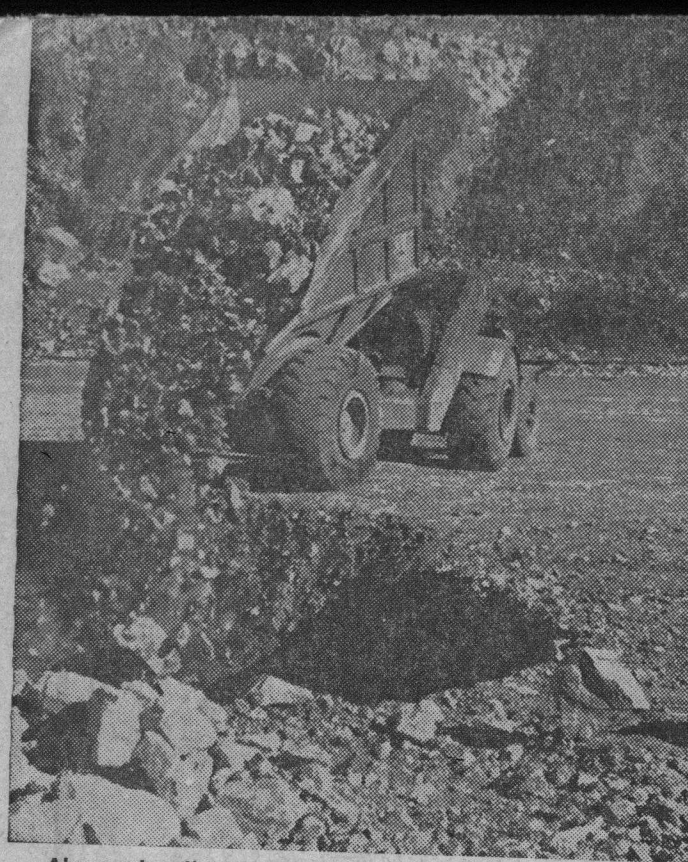
feet out over nothing. A worker standing on the edge warned the driver through hand signals when the cat rumbled too close to the edge.

Once a boulder as big as a garage pulled loose from the top and shook the landing as it

nels under the quarry floor in 1921, and they were one of the reasons Lindroth was called to work here. For 17 years he pushed the holes into solid rock.

Now there are five connecting tunnels covering a distance of more than two miles.





Above, when limestone rock has been blasted or shoved from the cliff side to the quarry floor, an electric shovel loads these 35 ton trucks. They haul rock a few hundred yards and unload into holes like this one. Where does the rock go? Below is a scene in one of the tunnels below the quarry floor. Battery driven engines pull gondola cars through here under huge hoppers below the surface holes. Here they are loaded for the cement plant in a matter of minutes.

gaged out limestone here and carted millions of tons of it three miles to the coast where it becomes the main ingredient for making cement at the big plant there.

The organization was known as the Portland Cement company then. In 1956 there was a financial transaction and a new sign went up which reads "Santa Cruz Cement—Division of Pacific Cement and Aggregates, Inc."

Last year 2.5 million barrels of cement were produced here—four sacks to the barrel. With 300 employees, PCA is the county's second largest industry.

The heart-beat of this operation is the quarry, said to be one of the largest in the west. Only about 25 men work here. Their main muscle power is TNT, dynamite and other explosives, but it's the cleverness of men's minds that has brought the innards of this mountain to the plant.

Recently one afternoon I saw how it worked. My guide was Fritz Lindroth of 223 Moore street, who retired December 31 as quarry superintendent. He was brought to the quarry 39 years ago from Alaska by the late Robert Kinzie Sr., former vice president of the original company. Lindroth was replaced by Manuel Netto.

Our tour started with a blast. High, half way up the quarry wall, 82 holes, 30 feet deep and four inches in diameter had been drilled on a rocky ledge. Into each hole had gone a stick of dynamite, a long rope packed with TNT, and about 65 pounds of ammonia nitrate (fertilizer) soaked with diesel oil. Each

"This," explained Lindroth, "is for the benefit of Davenport and Bonny Doon residents—so the housewives will know when to take their cakes out of their ovens."

Shrill whistles shrieked five minutes before the blast, and everything turned quiet. Workers cleared the area, and turned expectantly in the seats of their huge machinery and waited.

Then "WHOOOOM."

A muffled roar erupted inside a huge mushroom cloud of white smoke and a section of the quarry wall puffed out and fell. Huge boulders, as big as automobiles, arced outward in slow motion.

We were almost a mile away and even at this distance Lindroth was worried, for 6500 pounds of explosives could have rocketed debris to where we stood.

"That blast should have knocked down about 15,000 tons of lime-rock," he said.

We drove up into the small blast area to watch the next step. And it's a chiller.

A huge bulldozer, manipulated by Fiorindo Locatelli was engaged in the delicate endeavor of shoving boulders loosened by the blast over the cliff and down to the quarry floor about 400 feet below.

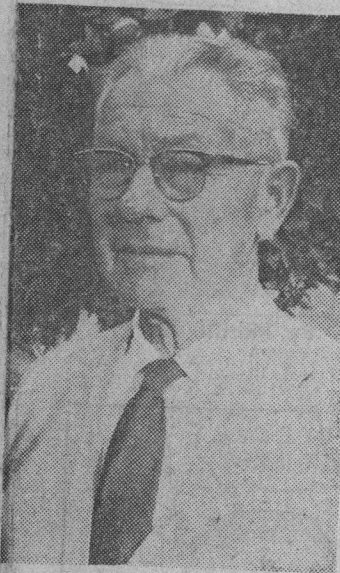
Other men with jack-hammers were breaking up the huge boulders to a manageable size. They were shoved over, too.

With his vision partly blurred by the huge radiator and the clatter of the engine, the operator is taking chances—it is generally important that he doesn't confuse forward with reverse at the point when his blade is sticking three

to pieces as it rolled.

On the quarry floor a huge electric shovel scooped up rocks from a previous blast and dropped them into 35-ton trucks. These trucks rumble a short distance to dump their loads in one of the huge holes in the canyon floor. This action can provoke double-takes by a casual visitor, until the method of this mystery is solved.

Lindroth solved it by driving out of the quarry and down the



Fritz Lindroth

canyon a way to the railroad tracks. These tracks approach the quarry on a lower level and disappear underground.

Work was started on the tun-

A battery-driven engine pulls an 11-car train into the tunnel and under one of the holes in the quarry floor.

Powerful air compressors open doors under the huge bunkers, letting the boulders fall into the cars. Using this method 11 cars can be loaded in five minutes. Each carries about 11 tons of rock. About 4800 tons are mined here in 16 hours.

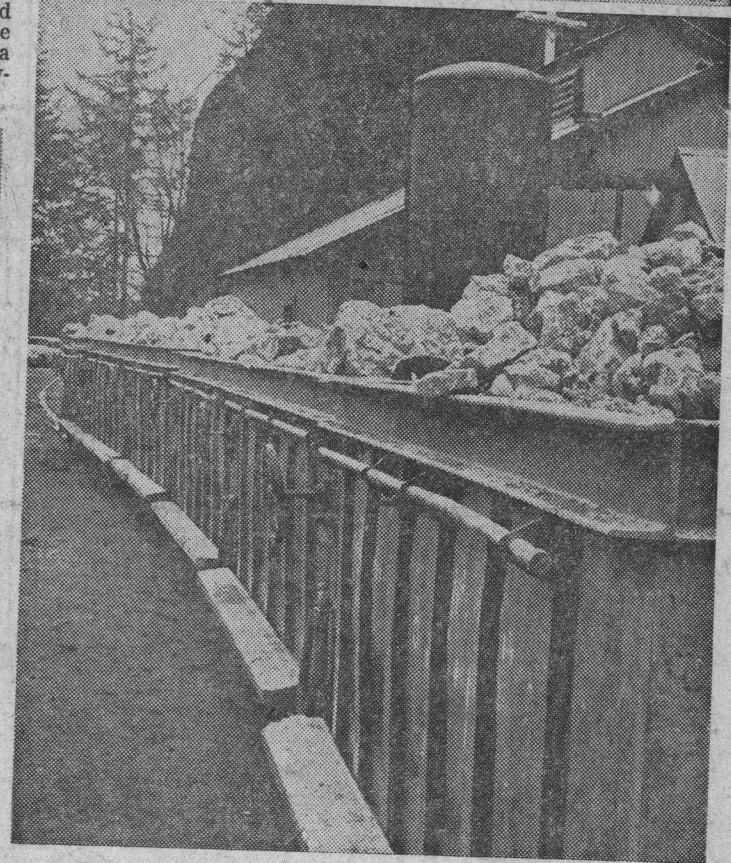
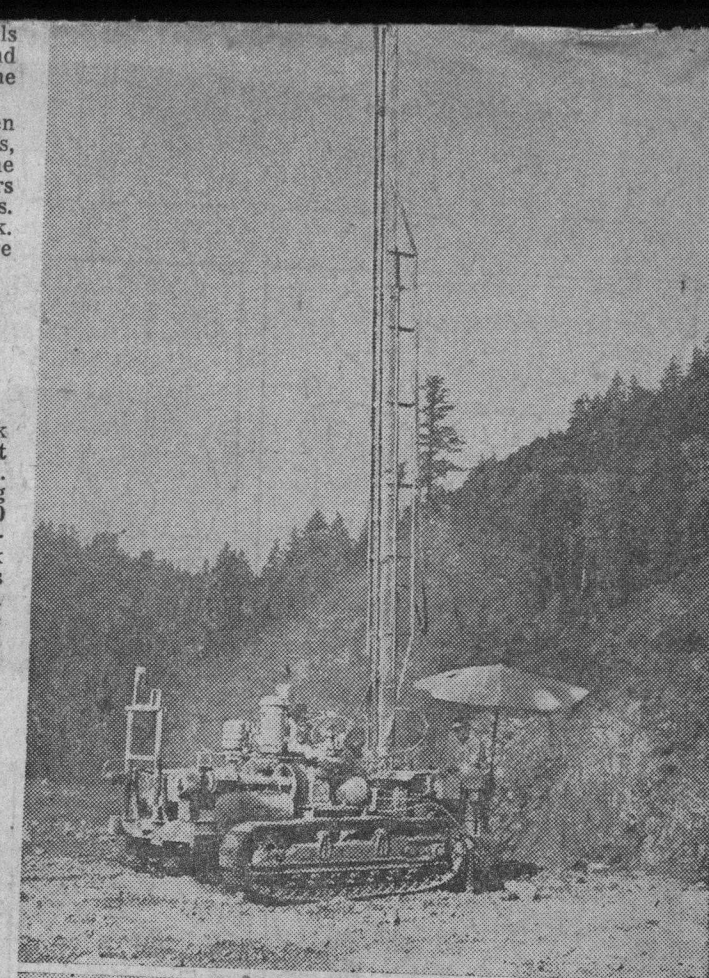
In 1922, Lindroth helped solve a special problem. San Vicente creek ran down the center of the quarry and during high water impeded operations.

The solution: drop the creek down into the tunnel and let it run under the quarry. It was done. A nine by 12 foot hole was dug upward to the canyon floor, 370 feet above. The men got to within 80 feet of the top, then struck a water pocket. The drop was completed by digging down from the surface. All this took more than a year.

The creek now flows quietly along one side of the main tunnel and out again to continue its course to the sea. But during the heavy rains of 1955, the creek went wild and flooded the tunnel, tearing out light bulbs in the nine-foot ceiling, twisting track and wrecking mining cars.

Since 1912 four men have been killed at the quarry, an amazingly good record considering the hazards involved.

Lindroth says that very few fossils are found in the quarry. The rarest find was a petrified palm tree, that might have once shaded a dinosaur or two on a pre-historic hot day above Davenport.



Left; after the blast, a bulldozer goes to work pushing loose boulders over the cliff to the quarry floor. It's quite a sight for people who like to see big rocks fall. At the bottom they are carried to the holes above the tunnels. Men also come to the blast area with air hammers to break up the bigger boulders. It takes some courageous "cat skinning" to push rock on the edge of a 400 foot drop. Above, are the gondolas loaded with limestone from the quarry floor tunnels, ready for the three mile trip to the PCA cement plant on the coast.

